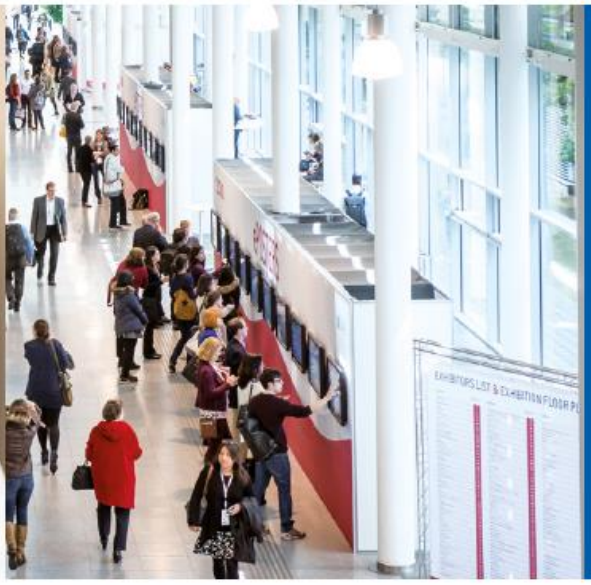
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Preliminary results for the evaluation of the impact of syndromic lower respiratory tract panel on antimicrobial management and infection control

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Background: Diagnosis of lower respiratory tract infections, hospital-acquired pneumonia (HAP) or community-associated pneumonia (CAP) in patients remains an important and challenging problem associated with significant morbidity, mortality, and cost. Syndromic lower respiratory tract infection panel (Biofire LRTI Panel) may shorten the time to apply the targeted antimicrobial treatment in patients with pneumonia and provide rapid application of isolation measures.

The aim of this study was to investigate the impact of Biofire LRTI Panel on targeted antimicrobial therapy and management of infection control in patients diagnosed with community-acquired pneumonia (CAP) or early hospital-acquired pneumonia (HAP) whom are planned to be hospitalized and treated in intensive care unit (ICU).

Materials/methods: Between October 2018 and September 2019, >18 years old patients admitted to Marmara University Pendik Training and Research Hospital, and planned to be hospitalized with the diagnosis of CAP or early HAP were chosen. Patients excreted sputa with <10 squamous epithelial cells. > 25 PNL in each high-power field at microscopic examination were included. Bacterial culture and syndromic lower respiratory tract infection panel (Film Array LRTI Panel, RUO version, BioFire Diagnostics, USA) performed simultaneously on sputum samples. Results were blind evaluated by two infectious diseases specialists for the decison of treatment change and application of infection control measures. Decision of antibiotic change, time to optimal antimicrobial change, bacterial culture result, Biofire LRTI panel result and applied infection control measures were recorded for each patient.

Results: Forty patients were met the inclusion criteria and evaluated. Biofire LRTI Panel detected at least one pathogen in 31 patients (77.5%), among these, 29 had bacterial, 15 had bacterial and viral, and 2 had viral pathogens. No pathogen could be detected in 9 patients (22.5%). Sputum cultures were positive only in 14/40 (35%) patients. Antibiotic change was decided in 20 patients and infection control measures were applied in 21 patients (Table 1&2).

Conclusions: Biofire LRTI Panel provides faster access to optimal antimicrobial treatment and high rate of antibiotic de-escalation in patients diagnosed with CAP and early HAP, and also contributes to the rapid implementation of infection control measures.

Table 1. Performance of Biofire LRTI Panel in comparison with bacterial culture.

		Biofire LRTI Panel		
		Positive	Negative	Total
Bacterial culture	Positive	14	0	14
	Negative	15	11	26
	Total	29	11	40

Table 2. Impact of Biofire LRTI Panel on optimal antimicrobial therapy and infection control.

Decision according to Biofire LRTI Panel result	#patients (%)
Antimicrobial change	**20 (50)**
De-escalation	9 (45)
Escalation	7 (35)
Targeted antiviral therapy	3 (15)
Stop antimicrobial treatment	1 (5)
Application of infection control measures	**21 (52.2)**
Droplet isolation precautions	13 (62)
Contact isolation precautions	8 (38)

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